BY ORDER OF THE COMMANDER
EIELSON AIR FORCE BASE

EIELSON AIR FORCE BASE
INSTRUCTION 91-212

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Safety

EIELSON AIR FORCE BASE BIRD AND WILDLIFE STRIKE HAZARD (BASH) PROGRAM

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This instruction implements AFPD 91-2, *Safety Programs*, and is used in conjunction with AFIs 91-202, *U.S. Air Force Mishap Prevention Program*, 91-204, *Safety Investigations and Reports*, and AFPAM 91-212, *Bird Aircraft Strike Hazard (BASH) Management Techniques*. This instruction provides a base program to minimize aircraft exposure to potentially hazardous bird strikes and applies to all host, associate, and temporary duty (TDY) organizations on Eielson Air Force Base (AFB), including the Air National Guard and US Air Force Reserve members and units. The 354 OG/CC is responsible for the implementation of this instruction. Ensure that all records created as a result of processes prescribed in this publication are maintained IAW Air Force Manual (AFMAN) 33-363, *Management of Records*, and disposed of IAW Air Force Records Information Management System (AFRIMS) Records Disposition Schedule (RDS) Refer recommended changes and questions about this publication to the Office of Primary Responsibility (OPR) using the Air Force (AF) Form 847, *Recommendation for Change of Publication*; route AF Form 847s from the field through the appropriate functional' s chain of command. This instruction requires collecting and maintaining information protected by the Privacy Act of 1974 (5 U.S.C. 552A) and AFI 33-332, Privacy Act Program. The use of the name or mark of any specific manufacturer, commercial product, commodity, or service in this publication does not imply endorsement by the Air Force. This publication may not supplemented or further implemented/extended.

SUMMARY OF CHANGES

This document was updated/corrected with current references to Air Force publications, current links to external websites and edited for grammatical errors.

1. Introduction. A bird/wildlife aircraft strike hazard exists at Eielson AFB and its vicinity due to resident and migratory bird species and other wildlife. Daily and seasonal bird movements create various hazardous conditions. This plan establishes procedures to minimize the hazard to US Air Force, Alaska Air National Guard, and all deployed aircraft at the installation and in their operating areas. This plan updates existing documents and is based on the current Bird/Wildlife Aircraft Strike Hazard (BASH) Plan, historical bird/wildlife strike records from Eielson AFB and surrounding operating areas, Staff Assistance Visit reports from the USAF Safety Center

BASH Team, USDA Wildlife Management Reports, and the summer 2010 visit by NGB/SEF. This instruction establishes a program to minimize wildlife strikes. It delineates Eielson's Bird Exclusion and Waterfowl Exclusion Zones for wildlife management purposes, and defines Vegetation Management Zones designed to make Eielson AFB unattractive to wildlife. Furthermore, it defines unit BASH responsibilities and outlines procedures for issuing bird conditions and reporting bird strikes.

1.1. **Responsibilities.** 354th Fighter Wing, Flight Safety (354 FW/SEF) will manage the overall BASH program at Eielson AFB. The United States Department of Agriculture/Wildlife Services (USDA/WS) is 354 FW/SEF's primary BASH detection and dispersal agency. USDA/WS will be the primary dispersal team for all of the wildlife within the airfield security fence and birds within the exclusion zones following guidance in both the USDA/WS' Wildlife Hazard Management Protocol (January 2013) and the Memorandum of Understanding between USDA/WS and 354 FW. AMOPS will implement dispersal efforts during the winter months (October through March) if USDA/WS is not immediately available and year round when assistance is requested from USDA/WS. 354th Civil Engineering Squadron (354 CES) will be responsible for vegetation management and overall wildlife management within Eielson AFB property. 354 CES wildlife biologist will serve as an additional advisor for the Eielson AFB BASH program, and will secure the proper federal depredation (*see attachment 4, paragraph 'f' for specific depredation procedures*) and state public safety permits required for the program.

1.2. **Phases of Operation.** This plan contains two phases of operation: Phase I and Phase II. Phase I concentrates on wildlife control and habitat modification and is in effect year round. Phase II concentrates on bird avoidance using operating restrictions and increased dispersal efforts. Eielson and many of its associated military operating areas, ranges, and low level routes are located near or within primary migration routes. Historical bird migratory patterns are used to determine Phase II periods. Phase II periods are typically 15 Apr thru 15 May (spring migration) and 15 Aug thru 20 Sep (fall migration). These periods are subject to change based on weather pattern variations. 354 FW/SEF, USDA/WS, and the 354 CES Natural Resources Office (354 CES/ CEIEA) will coordinate to determine if Phase II operations should begin or end on different dates.

2. Environment. Eielson AFB is a 19,920-acre military reservation located approximately 150 miles south of the Arctic Circle and 25 miles southeast of Fairbanks, Alaska.

2.1. **Eielson Base Proper.** The base is located on a flat alluvial plain adjacent to the Tanana River. There are two hilly areas on base, one to the north and one to the east with 15,798-forested acres combined. There are 2,557 acres of hardwood forest (paper birch and balsam poplar), 1,609 acres of white spruce, 2,078 acres of mixed forest (white spruce and paper birch), 7,957 acres of black spruce, 1,464 acres of brush land (willows, alder, dwarf arctic birch), and 133 acres of marsh. About 3,600 acres of hardwood and mixed forest are mature and provide excellent nesting habitats for raptors. There are 13 lakes and 91 ponds totaling 602 acres and 29.1 miles of freshwater streams. The area adjacent to the runway is grassland covered with Kentucky bluegrass, red fescue, smooth brome, clovers, dandelions, alpine sweet-vetch, and fireweed. It is being invaded by small-sized balsam poplar, willow, and alder. One pond lies adjacent to the runway and is in the process of being completely filled under a Section 404 permit. The grassland and ponds surrounding the airfield provide habitat which attracts a variety of birds. In particular, if the grass is cut below 10 inches, it can

potentially attract migrating geese. The lakes and ponds attract waterfowl; additionally, the ponds and low spots provide a mud source for swallows that build nests under the eaves of buildings near the runway. The grassland supports a variety of birds, along with rodents, and is hunted by raptors and mammals such as fox. The asphalt and concrete areas comprising the runway and taxiways are occasionally used by gulls, shorebirds, common ravens, raptors, and swallows.

2.2. **Airfield.** The airfield turf is a mixture of grasses such as smooth brome (*Bromus inermis*), red fescue (*Festuca rubra*), native wheat grasses (*Agropyronsp.*), and Kentucky bluegrass (*Poa pratensis*) with extensive areas of broad-leaved weedy vegetation including clovers (*Trifolium sp*.), dandelions (*Taraxacum officinale*), alpine sweet-vetch (*Hedyserum alpinum*), and fireweed (*Epilobium angustifolium*). Turf grows to the edge of the operating surfaces in most places as recommended, but areas of bare soils, possibly due to the effects of snow removal, are evident in many areas of the field. Some bare areas and weedy vegetation exist where turf is disrupted by construction activity or in areas where terrain or soils made mowing difficult. Ideally, the entire infield area of the airfield should be established in a thick, uniform stand of grass without openings or weedy vegetation present. Bare areas may provide ideal roosting, nesting, and loafing sites for shorebirds, gulls, waterfowl, ravens, and small flocking Passerines. In addition, bare areas can support habitat for egg-laying by grasshoppers, that when hatched, can attract hazardous bird activity to this available food source. Bare areas also contain gravel and grit that is highly attractive to birds such as pigeons that use these materials to aid in digestion. These areas also capture windblown seeds, and expose insects that are visible and attractive to a variety of birds.

2.3. **Wetlands.** Wetlands, drainage ditches, permanent and temporary standing water are also present within the airfield perimeter fence. Most ditches are properly maintained with steep sides and trimmed vegetation. Notable exceptions include the ponds and natural drainage in the South Loop Road area that were significant attractants to birds and other wildlife. These features are classified as federal jurisdictional wetlands. A small pond southwest of the Runway 32 approach end near the fence along the Richardson Highway is partially filled and steepened to decrease attractiveness to wildlife. Outside the Aircraft Operations Area fence, but within base property, there are extensive wetlands, streams, creeks, sloughs, and small and large water bodies. These include natural areas such as the area west of midfield and several base recreation lakes, as well as man-made structures such as sewage lagoons and effluent pond at the north end of the field, and the power plant cooling pond to the east. Additional and extensive water features and wetlands exist in the areas surrounding the base. All of these areas attract a wide variety of waterfowl, gulls, shorebirds, and other species.

2.4. **Airfield Fence.** The airfield is currently enclosed with a chain link fence for security while deterring wildlife from entering the field. The fence is not maintained to recommended heights that allow wildlife to enter the airfield along with numerous gaps along the base of the fence from frost heaving. In addition, it has been breached by wildlife through gates poorly designed, maintained, and left open. An aerial survey of the airfield and surrounding areas indicates wildlife trails were evident leading to and from some of these breeches, and animals such as predators and moose have been noted on and around the airfield.

2.5. **Blair Lakes Range.** The 1,370-acre Blair Lakes Range, within R2211, is surrounded by a 32,594-acre buffer zone, and is located approximately 25 miles southwest of Eielson

AFB. The range and buffer area are relatively flat and drained by numerous small creeks. The uncleared portion (32,594 acres of the Blair Lake Range) is generally dominated by black spruce and tamarack forest interspersed with open brush land. The black spruce forest, which covers about half the acreage, is usually 15 to 30 feet tall and 4 to 5 inches in diameter. The open brush land has an over story of resin birch and willow species. The under story contains Labrador tea and bog blueberry. Much of the brush land acreage is post-fire vegetation. Two basic forest types are found along the stream courses. One is characterized by green alder and the other by paper birch. The paper birch is generally 60 feet or taller and in a state of decay. The cleared portion (1,354 acres) of the Blair Lakes Range is covered with black spruce wetlands maintained in an early stage of vegetation succession as the result of periodic brush control. The primary vegetation is small black spruce, Labrador tea, resin birch, dwarf arctic birch, willow (all approximately 10 to 40 inches tall because of periodic maintenance), sedge grass, fireweed, and mosses. The cleared portion has three ponds. A .3-acre pond, lies directly in front of the control tower. A 1.4- acre pond, located southwest of strafe pit 1, is an old material borrow site not located in the direct flight path of aircraft using the strafe pits. This pond is being filled to discourage use by waterfowl. A 10.9-acre pond, located by the flank tower, is a new material borrow site. This pond is located where the aircraft fly at high altitudes and has been excavated deeper which will discourage waterfowl use. The ponds and maintained areas can be attractive to migrating waterfowl. Ducks and Canadian Geese account for about 89.4 percent of the migrating waterfowl using the range. Sandhill Cranes (9.7 percent), gulls (0.6 percent), and swans (0.3 percent) use the range to a lesser extent. A few ducks and sandhill cranes reside on the range during the summer. Many (75 to 125) Cliff Swallows occupy nests attached to the buildings in the range complex. Hawks hunt the cleared portion of the range throughout the summer.

2.6. **Yukon Training Range.** The Yukon Training Range, within R2205, is about 2,650 acres located approximately 14 miles east of Eielson AFB. Stuart Creek flows southwest to northeast dividing 1,000-foot tall hills to either side. The creek valley is covered with tundra and scattered small brush. The south sides of both hills are covered with paper birch interspersed with scattered white spruce. The north sides of the hills are covered with black spruce. The older mature paper birch provides nesting habitat for raptors. A few ducks may occasionally use the creek. Both raptors and ducks have been observed on the range.

2.7. **Oklahoma Range.** The Oklahoma Range, within R2202, is about 52,000 acres located approximately 50 miles southeast of Eielson AFB. Delta Creek forms the western border and One Hundred Mile Creek, the eastern boundary. The terrain is generally flat. The range has interspersed patches of small-sized black spruce containing a very small amount of small-sized paper birch and open areas with resin birch, Labrador tea, bog blueberry, tussock cotton grass, and mosses. The creeks are bordered with larger sized white and black spruce and

3. Training. All base personnel will be briefed at the newcomer's orientation by 354 FW Safety on the responsibility each individual has in reporting bird or wildlife hazards.

3.1. **Annual Training.** 354 FW units and tenant units should receive an annual refresher brief just prior to the spring migration. 354 FW/SEF may brief groups in conjunction with a safety meeting or a commander’s call at the squadrons. If this cannot be accomplished prior to the beginning of the spring migration period, unit commanders have the responsibility to ensure their members receive refresher training to remind members of bird hazards to flying

operations. 354 FW/SEF will have the training available for electronic distribution by request.

3.2. **Host and Tenant Safety Offices.** 354 FW/SEF and 168 ARW/SEF, in conjunction with squadron safety officers, will maintain a bird hazard awareness program. Briefings, films, posters, and other methods will be used to inform personnel about local bird hazards and reporting procedures.

3.3. **Dispersal Personnel.** 354 FW/SEF, Airfield Management personnel, and trained BASH volunteer personnel will maintain BASH dispersal/depredation qualifications. 354 FW/SEF, Airfield Management personnel, and BASH volunteer personnel will maintain dispersal qualification to augment USDA/WS capability during peak migration periods. Volunteers must first have the approval of their unit commander before volunteering to assist 354 FW/SEF with bird dispersal/depredation operations (*see attachment 4, paragraph 'f' for specific depredation procedures*).

3.3.1. BASH team volunteer augmentation personnel will contact 354 FW/SEF to schedule and accomplish the following requirements:

3.3.1.1. Complete SFS/CATM M870 shotgun qualification training.

3.3.1.2. Attend USDA Managing Wildlife Hazards at Airports training. This training is mandatory for all personnel directing dispersal/depredations. If unable to attend formal training, 354 FW/SEF will coordinate with USDA for ad hoc training sessions on using pyrotechnic devices and other dispersal methods (POC: **Patrick.M.Gray@aphis.usda.gov**). All personnel must be familiar with bird identification, wildlife deterrent procedures, and the proper use of pyrotechnic devices as outlined in the USDA/WS Wildlife Hazard Management Protocol (January 2013).

3.3.1.3. Complete BASH Dispersal Team Member Training and any applicable CBT as currently defined by 354 FW/SE.

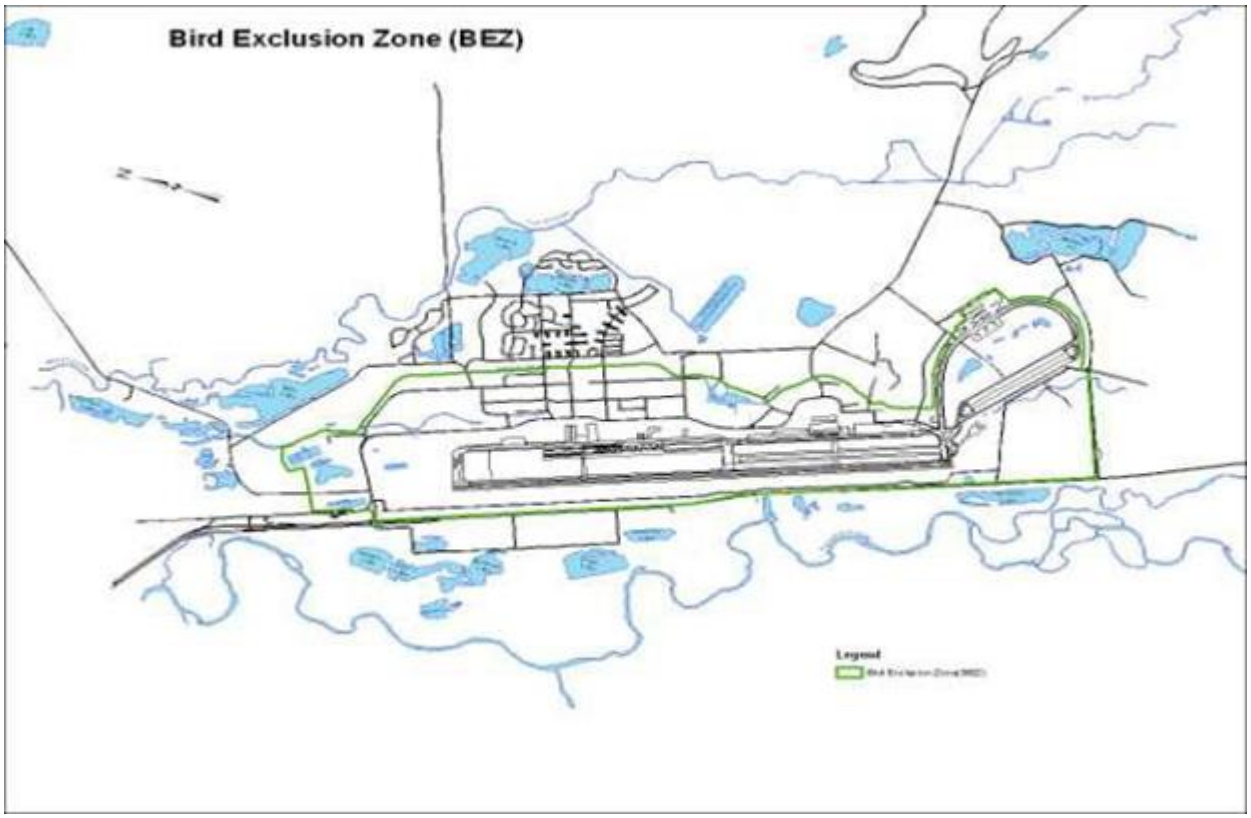
3.3.2. BASH training records will be created and maintained by 354 FW/SEF. All training will be documented IAW AFPAM 91-212.

4. Exclusion zones. Boundaries have been established to aid all agencies in defining where wildlife hazards exist, wildlife management priorities, and vegetation management goals. Two exclusion zones have been established, the Bird Exclusion Zone (Figure 1) and the Waterfowl Exclusion Zone (Figure 2). This section outlines the use and requirements of the maps and charts required to implement the BASH program. Flight Safety should maintain and update maps and charts as necessary. The exclusion zones could change throughout the course of the season depending on present review of the permits by the federal and state permitting agencies. Periodic habitat surveys should be conducted to identify major habitat types available to birds, and update maps based on these surveys as local land uses and habitat conditions change. When a specific wildlife hazard is identified and the location of the activity is isolated, use the maps to determine if a specific habitat attractant exists that can be altered within the scope of this plan. 354 CES will use maps as a guide for the long range civil engineering program to reduce actual and potential hazardous environmental factors at Eielson Air Force Base.

4.1. **Bird exclusion zone (BEZ).** The BEZ includes all runways and taxiways and the immediate area. Signs will be placed outlining the BEZ. The signs will have a graphic representation of "no birds" with directions to report bird activity to the BASH hotline (377-BIRD). The BEZ identifies an area where any wildlife presence will not be tolerated. Priority dispersals will be large birds or those with flocking tendencies, followed by smaller birds and mammals.

4.2. **BEZ Boundaries.** The physical boundaries of the BEZ are as follows: Begin at the intersection of Old Richardson Highway and Central Ave. Go north along the installation fence line, turn east along the dirt road north of the main gate ponds and across Transmitter Rd to the west edge of the Waste Water Treatment Ponds. Continue around the north end of the pond to Garrison Slough. Follow the east edge of Garrison Slough south to the Loop Access Road. Follow a straight line southeast across Loop Access Road to the outside edge of the airfield security fence. Follow the fence around the loop area to the intersection of the Richardson Highway. Continue north along the east edge of the Richardson Hwy to the intersection of Richardson Highway and Central Ave. Follow east along the north edge of Central Ave to the intersection of Central Ave and Old Richardson Highway meeting with the starting corner.

Figure 1. Bird Exclusion Zone (BEZ)

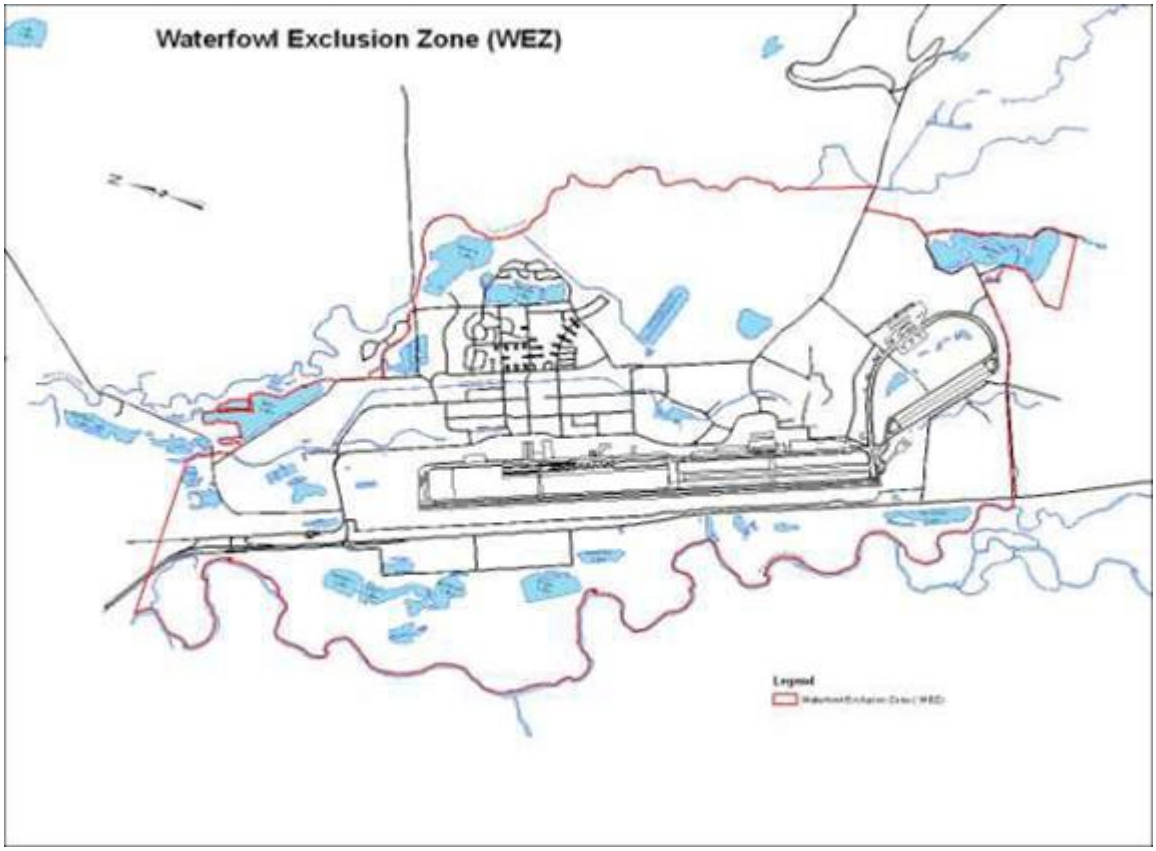


4.2.1. **Waterfowl exclusion zone (WEZ).** The WEZ is an area that extends from the BEZ that also supports hazardous wildlife activity, but secondary versus the BEZ in the management of wildlife. Habitat modifications, to include minimizing open water and managing large open areas to be unattractive to birds, will be incorporated in conjunction

with aggressive wildlife management techniques. All bird activity in the WEZ, specifically waterfowl and larger birds should be reported to BASH/dispersal personnel utilizing 377- BIRD.

4.3. **WEZ Boundaries.** The physical boundaries of the WEZ are as follows: Begin at the point where the north installation property line intersects with Piledriver Slough. Go east following the installation property line to the intersection with Garrison Slough. Follow the west edge of Garrison Slough to the intersection with Arctic Ave. Follow the east edge of Arctic Ave. south for 500 feet. Go east along the tree line to the edge of Bear Lake. Follow the edge of Bear Lake to the southeast corner of Bear Lake. Continue along the tree line to the intersection of Arctic Ave. Follow Arctic Ave to Manchu Rd. Go east on Manchu Rd. to the intersection of French Creek. Follow the west edge of French Creek to the point where French Creek crosses Quarry Rd. Follow the north edge of Quarry Rd to the intersection with Mullins Pit Rd. Follow the east edge of Mullins Pit Rd to the intersection of Von Rueden Ave. Follow the east edge of Von Rueden Ave to the end. Then follow a straight line west from Von Rueden Ave across Wildlife Way to the west tree line of Mullins Pit. Follow the tree line to Mullins Pit Rd. Follow the north edge of Mullins Pit Rd to intersection with the airfield fence. Then follow a straight line along the edge of the fence across Richardson Highway to the intersection with Piledrive Slough. Follow the eastern edge of Piledriver Slough back to intersection with the starting point.

Figure 2. Waterfowl Exclusion Zone (WEZ)



5. Habitat Modification. By incorporating specific practices into the base land management, Eielson AFB can maintain an airfield habitat less attractive to birds and other wildlife. 354 CES/ CEIEA is responsible for habitat modification. Any recommendations to modify habitats beyond those presented in this document must be coordinated with 354 CES prior to implementation.

5.1. **BASH vegetation management zones.** Vegetation management will vary by BASH vegetation zones as delineated by the following zones. These zones are depicted in Figure 5.1.

5.1.1. Airfield Zone. The Airfield Zone is that area inside the airfield perimeter fence. A monotypic vegetative environment within the airfield perimeter fence is preferable. Non-berry, brome, wheat grass, or non-seed producing grass is most desirable. In addition, the spraying of insecticide is recommended along aircraft movement surfaces (within 300 feet) where the establishment of vegetative growth is minimal. Insecticide should be sprayed when grasshoppers are first observed to minimize their attractiveness to birds.

5.1.2. Remainder of BEZ/WEZ areas. Within the remaining area of the BEZ/WEZ, open, non-lawn areas greater than one acre in size should only be managed if needed. Grass will be the preferred vegetation within 50 meters of the airfield perimeter fence. All new trees and shrubs will be non-berry/fruit producing species. Planned landscaping and construction projects will replace berry/fruit producing trees and shrubs with non-berry/fruit producing species within the BEZ. Lawns are allowed in association with buildings, but should be limited to no more than ½ acre. When possible, large lawns should have trees and shrubs dispersed at 6-10 plants per acre to discourage geese.

Figure 3. Sample BASH Vegetation Management Zones

5.2. **Managing grass height.** 354 CES/CEIEA and 354 FW/SEF are responsible for determining the timing of mowing. Coordinate mowing with AMOPS to mow during periods of low flight activity. Mowing within the airfield perimeter fence should occur twice

a year, once in early spring to reduce rodent populations and nesting cover prior to the nesting season, and again in late fall following the fall migration. However, mowing should continue to be monitored to determine the best grass heights for deterring birds. Lawns within the airfield zone may extend no more than 1 meter from sidewalks and streets and no more than 20 meters from buildings.

5.3. Grass Height Waiver. Airfield grass height will be maintained at 7-14 inches (IAW AFI 91-202 section 7.3.1.5.10) while making sure faster growing weeds are cut before they go to seed to discourage seed eating birds from using the airfield. Grass height may extend beyond AFI 91- 202 requirement to 10-20 inches per HQ AFSC/SEFW waiver dated August 2006 on file with 354 FW/SEF, however this waiver will not be used to preclude mowing when mowing is deemed appropriate by 354FW/SEF and USDA based on observed bird activity.

5.4. **Grass Mowing Cycle.** The primary focus should be on the grass height and weed seed heads. Grass between 7-14 inches discourages flocking species from foraging on the airfield, because reduced visibility disrupts inter-flock communication and flock integrity by reducing the ability to detect predators. Grass exceeding 14 inches (36 cm) will attract some bird species and rodents, which in turn attract raptors. The airfield should be mowed when the average grass height, not including seed heads, exceeds tolerances for grass height. Grasses produce prominent seed stalks, the height of these seed heads should not be the sole reason for mowing. Mowing to eliminate grass seeding will increase mowing cycles. Eliminating weeds and cultivating a uniform monoculture of grasses can be more effective in discouraging seed-eating birds from feeding on the airfield than mowing grass seed stalks. Begin mowing adjacent to runways and finish in the infield or outer most grass areas. This causes insects and other animals to move away from aircraft takeoff and landing areas. Coordinate mowing with low periods of aircraft flight activity. Also, avoid mowing grass shorter next to the runway than in other areas, as much as possible. Acceptable summer season grass lengths for all non-airfield areas of base will be designated by 354 FW/CC (or designated representative) each March based on recommendations by the landscape development board. Areas recommended for mowing should be kept to a minimum while meeting mission requirements to discourage birds.

5.5. **Managing shrublands.** In general a sterile environment on and around the airfield perimeter fence is preferred. Shrubs should be cut every year prior to ground thaw and before leaf-out to minimize its attractiveness to small mammals, passerines, and browse for moose. Off the airfield, shrubs noted to attract hazardous wildlife activity within the control zones, will be cut and maintained to minimize their attractiveness to wildlife.

5.6. **Controlling broad-leafed weeds.** Keep volunteer broad-leafed plants to a minimum in grasslands in the Airfield and industrialized/housing areas as they attract a variety of birds, may produce seeds or berries, and may limit grass growth. Non-invasive broad leaved plants may be allowed in the Clear Zones. The Clear Zones are those portions of the BEZ located at the end of each runway with a perimeter of 3000’ to either side of the runway centerline and 3000’ straight out from the runway end. Heights of broad-leafed weeds should be maintained to minimize their attraction to wildlife.

5.7. **Planting Bare Areas.** Note that bare areas are frequently used by birds as feeding and resting sites, or to obtain grit. Eliminate them on the airfield. Plant grass as necessary and appropriate on the airfield and maintain irrigation, if required. Such requirements should

come at the behest of USDA personnel via 354 FW/SEF who will then generate work order request from 354 CES.

5.8. **Fertilizing.** Selectively stimulate grasses to promote a uniform cover based on soil test results. Irrigation may be required to support turf growth for limited times, such as when establishing new cover.

5.9. **Reducing Edge Effect.** Edge effect refers to the highly attractive transition zone between two distinct habitat types (e.g., brush to grassland). Maintain the airfield as uniformly as possible to reduce this effect.

5.10. **Removing Dead Vegetation.** As soon as possible, remove dead vegetation such as brush piles, grass clippings, hay bales, etc., and the cover it affords.

5.11. **Removing Dead Birds and Animals.** Contact USDA Wildlife Services or 354 FW/SEF to remove any wildlife remains from the airfield to avoid attracting wildlife, and to determine if the remains may have been caused by a collision with an aircraft or flightline vehicles and equipment.

5.12. **Woodlands.** Within the BEZ/WEZ managing woodland density and structure can effectively discourage large birds or large concentrations of birds. Woodlands within the airfield zone should be removed or greatly thinned to prevent moose, bears and canids from finding cover, to reduce raptor perches, and to prevent birds roosting or nesting near the airfield.

5.13. **Berry/fruit producing trees and shrubs.** Mature berries can attract several species of birds during fall and winter. Minimizing their presence within the BEZ/WEZ is a BASH objective. Berry/fruit producing trees within the BEZ/WEZ should be phased out on a planned basis. No new berry/fruit producing trees or shrubs that attract birds will be planted within the BEZ/WEZ.

5.14. **Bird-proof buildings, hangars, and structures.** 354 CES/CEP will ensure that all new structures within the BEZ/WEZ are designed to avoid attracting nesting and perching birds. These designs will minimize open vents, covered ledges, and graveled flat roofs where practicable based on need, economics and architecture. When a facility within the BEZ/WEZ is repaired or renovated at or above 25% of the replacement value of the facility where practicable, bird proofing or structure removal is required to exclude nesting and perching birds. Vents or other openings in buildings within the BEZ should be covered with ¼ or ½ inch hardware mesh to prevent nesting by swallows. Excluding birds from a structure they currently use will often displace them to an adjacent structure. Existing bird nests should be destroyed prior to egg laying (in accordance with federal and state permits). Facility managers are responsible for purchasing and utilizing the equipment necessary to keep their buildings free of swallow nests. Additionally, consider utilizing the following in concert with USDA and 354FW/SEF assistance.

5.14.1. Netting. Install netting under building superstructure to exclude pest birds from roosting areas. Ensure no gaps or holes are present for birds to get through.

5.14.2. Avitrol, Starlicide, or Other Avicides. Coordinate with USDA,Wildlife Services about using any labeled bird control chemicals.

5.14.3. Trapping/Removal. Trapping and removal of wildlife will be coordinated through USDA Wildlife Services and the 354 FW/SEF.

5.14.4. Design Features. Consider structures with the support features located on the outside of the building to greatly reduce bird numbers. Consider this design when planning new hangars or other structures.

5.14.5. Door Coverings. Use netting or plastic strips suspended over the doors to exclude birds. Ensure no tears or holes are present that allow birds access to the hangar.

5.14.6. Sharp Projections. Use in limited areas such as ledges, overhangs, or small places where birds cannot be allowed. Expense prohibits their use over the entire structure.

5.14.7. Night Harassment. Use high pressure air or water to make hangars an undesirable roosting site. Persistence is the key.

5.15. **Leveling of airfield zone.** Level or fill high or low spots to prevent standing water and reduce attractiveness to birds.

5.16. **Maintaining drainage ditches.** Regularly inspect ditches to keep them clear. Maintain ditch sides as steeply as possible (minimum slope ratio of 5 to1) to discourage wading birds and emergent vegetation. Improve drainage as necessary to inhibit even temporary ponds or puddles.

5.17. **Minimize open water.** All activities affecting wetlands must be coordinated with 354 CES/CEIEA and US Army Corps of Engineers. When properly permitted, eliminate snowmelt ponds or standing open water in the BEZ, especially on the airfield. **NOTE:** These activities will be coordinated with AMOPS in accordance with AFI 13-204 Vol 3, *Airfield Operations Procedures and Programs*. If unable to relocate snowmelt pond, ensure it is drained as soon as possible. Monitor ponds throughout year and drain as necessary. Eliminating standing water immediately is essential to avoid development of wetlands. Coordination with the Army Corps of Engineers and the appropriate state environmental permitting office is required prior to altering wetlands. Also see the 2004 Memorandum of Agreement between the Corps of Engineers, Federal Aviation Administration, USAF, and other federal agencies regarding waivers or exemption for on-site wetland mitigation procedures. Eliminate small ponds or puddles and some large bodies of standing water to reduce attractiveness to birds. Low spot and ditch maintenance is essential.

5.18. **Erosion control vegetation.** Outside of the airfield zone use vegetation that does not attract birds. Woody vegetation species such as willow, birch, poplar, or alder are desired species. Non-invasive annual grasses may be planted for initial soil stabilization.

5.19. **Pest controls.** Invertebrates and rodents are key food sources for many birds. Grasshoppers are of special concern in the BEZ, when abundant grasshoppers can attract several species of gulls, ravens, and passerines. July and August are primary months of grasshopper abundance. Another attractant to avian predators, coyotes, and foxes are small mammals, primarily microtines. A reduction of mammalian predators will likely promote small mammal population outbreaks of greater frequency and higher numbers that will attract increased numbers of avian predators. Any persistent gull concentrations on the airfield should be considered an indication of a potential insect population outbreak. Appropriate pesticides should be on hand to respond to insect outbreaks if deemed practicable. Preventive

treatments attacking larval stages should be applied within the airfield zone where practicable.

5.20. **Controlling waste disposal.** All dumpsters used within the BEZ/WEZ, including base housing, shall be designed to remain closed and inaccessible to wildlife. Non-securable dumpsters shall be replaced on a planned basis when economically feasible. Ravens and gulls are frequently attracted to dumpsters that are not closed and secured. Facility managers within the BEZ/WEZ will have primary responsibility to monitor dumpster repair and remove waste prior to being overfilled.

5.21. **Fencing.** Employ fencing in accordance with FAA and AF guidelines to deter large mammals and other wildlife from entering the airfield environment.

5.22. **Discourage wildlife feeding.** Signs should be placed appropriately to educate the public to the legality and hazard posed by feeding any wildlife. Bird feeders will not be allowed within the BEZ but may be allowed in the WEZ for small birds only. Hazards of feeding wildlife will be presented during newcomer's orientation by 354 FW Safety.

6. Bird Hazard Warning System. These procedures establish methods to use for the immediate exchange of information between ground agencies and aircrews concerning the existence and location of birds that pose a hazard to flight safety. If a bird hazard exists, notify the 354 FW Supervisor of Flying (SOF) (354 OG/OGV), the Tower Watch Supervisor (354 OSS/OSAT), or AMOPS. Radio net or telephone can be used to make this notification. Telephone reports can also be passed to the dispersal team at 377-BIRD (-2473).

6.1. **Bird Watch Condition (BWC) Codes.** The following terminology has been established for rapid communication of bird activity. Bird locations should be given with the condition code.

6.1.1. Declaring a BWC . The authority to declare a BWC is vested in the 354 FW SOF during local 354 FW flight operations. Conditions are declared based on ground observations, pilot reports, and all other available information.

6.1.1.1. When on duty, the 354 FW SOF is the only person authorized to change the bird watch condition.

6.1.1.2. If the 354 FW SOF is not on duty, the AMOPS representative on duty will determine the BWC.

6.1.2. **BWC SEVERE** will be declared when any of the following occur: any large bird or concentrations of birds above or in the vicinity of runway (within 100 feet) or in arrival/departure routes; flocking birds crossing within 1nm of runway ends; any reported bird strike in Class D airspace; large concentrations of birds in the BEZ; at times for bird dispersal conducted in the BEZ; or bird levels are at concentrations in the BEZ greater than BWC moderate. **Note: BWC SEVERE** need not be declared solely for the purpose of bird dispersal, but should be declared if dispersal actions will impact flying operations. Only during times when actual hazards are noted as described above should conditions be elevated and flight restrictions employed. Seasonally determined BWC not only leads to lost training time, but can lead to diversion of assigned and transient aircraft to other airfields such as Fairbanks International where condition codes are absent and aggressive wildlife dispersal activities may not be present, potentially leading to increased hazards at

these locations. Low-level routes - Low-level routes reported as BWC **SEVERE** (by pilots) are canceled for the day.

6.1.2.1. Restricted areas (R2202, R2205, R2211) - Use is restricted above 5,000 feet AGL until the SOF/RCO determines the severe bird hazard no longer exists.

6.1.2.2. Eielson AFB pattern - Takeoffs, patterns, and landings are prohibited (unless approval is specifically granted by the 354 OG/CC or in an emergency). Formation/chase is prohibited.

6.1.3. **BWC MODERATE** will be declared when any of the following occur: high daily bird survey numbers; flocking birds are observed in the Class D airspace; or moderately increased levels of birds are observed in the BEZ, not meeting the BWC **SEVER** criteria. BWC moderate requires increased vigilance by all agencies and supervisors and caution by aircrews. Low levels - Minimum altitude will be 1,000 feet AGL on affected route segment(s). Restricted areas (R2202, R2205, R2211) - Flight leads will change events as required to avoid bird activity. Minimum altitude is 1,000 feet AGL. Eielson AFB pattern - Departures and arrivals will avoid identified bird activity. Single-ship takeoffs and full stop landings only, unless the 354 OG/CC approves otherwise. Formation or interval takeoffs with less than 10 seconds of spacing and formation landings are prohibited. **BWC LOW** Bird activity on or around the airfield representing low potential for strikes.

6.2. **Traffic pattern restrictions.** After coordinating with the tower supervisor, the SOF will restrict aircraft according to the BWC. If the SOF is absent, the tower supervisor will be responsible for establishing restrictions.

6.3. **Dispersal operations.** From approximately April to the end of September USDA/WS detection and dispersal teams will operate in accordance set forth in the Annual Cost Estimate agreed to and signed by USDA/WS and 354 FW/SE. They will manage wildlife in accordance with guidance as stated in the USDA/WS Wildlife Hazard Management Protocol (January 2013) and the Memorandum of Understanding between the USDA/WS and Eielson AFB. 354 FW/SE, AMOPS personnel, and 354 CES/CEIEA can also be called for further assistance, if required. In addition, 354 FW/SEF and AMOPS personnel that are trained by USDA/WS can also perform dispersal duties, if required.

6.3.1. Prior to initiation of dispersal actions in the BEZ or WEZ, the dispersal team will coordinate (obtain permission for dispersal in the BEZ, and advise of dispersal efforts in the WEZ) the location and number of wildlife with the Tower Supervisor. If dispersal efforts will impact flying operations, BWC **SEVERE** should be declared prior to dispersal activities in the BEZ, and monitored for changes in BWC in the WEZ. If there are no flying operations, USDA personnel may request blanket approval for dispersal if these operations will occur for a lengthy period of time.

6.3.2. However, USDA personnel will coordinate any use of firearms or pyrotechnics with the Base Defense Operations Center (BDOC at 377-5130) prior to dispersals to mitigate any potential for false active shooter alerts. Coordination will include location, duration, and type of dispersal.

6.3.3. Birds and mammals will be managed utilizing a variety of methods. The method used will be at the discretion of BASH/dispersal personnel based on the situation.

6.3.4. When the target birds depart the area, the SOF and/or AMOPS will be notified so the BWC can be lowered. In order of precedence: SOF, and Airfield Manager (or their designated representative) declares BWC as authorized by the 354 OG/CC.

7. Specific Responsibilities. This list is not all-inclusive and should be tailored as necessary.

7.1. **354th Fighter Wing.** The Vice Wing Commander (354 FW/CV) or designated representative, chairs the Bird/Wildlife Hazard Working Group (BHWG) and is the approval authority for its recommendations.

7.2. **354th Operations Group Commander** (354 OG/CC). The 354 OG/CC will issue specific guidance for aircrew, SOF, Air Traffic Control, AMOPS, and Command Post on procedures to avoid areas and times of known hazardous bird concentrations, mission permitting. Declares, disseminates, and terminates Bird Watch Conditions at the Eielson AFB installation, training areas, and deployed locations through the SOF, or designated representatives. Issues specific guidance for aircrews and SOFs on procedures to be followed under BWC.

7.3. **354th Operations Group Standardization and Evaluation** (354 OG/OGV). The 354 OG/OGV will:

7.3.1. Ensure bird hazard awareness and the Eielson AFB BASH program is briefed to all TDY personnel.

7.3.2. Provide guidance to aircrews for the use of the United States Bird Avoidance Model (USBAM) and, when available, the Avian Hazard Advisory System (AHAS) during the mission planning process if available.

7.3.2.1. AHAS is a national radar bird detection system for the US Air Force. It uses the next generation radar (NEXRAD) weather radar system to monitor large-scale migratory bird activity in the lower 48 states. The current conditions shown by the AHAS web page also include the risk from migration and soaring bird activity, which is determined by predictive models using National Weather Service (NWS) weather data. More information is available on the AHAS website: **http://www.usahas.com**.

7.3.2.2. The USBAM program objective was to develop a predictive bird avoidance model using geographic information system (GIS) technology as a key tool for analysis and correlation of bird habitat, migration, and breeding characteristics, combined with key environmental and man-made geospatial data. More information is available on the Bird Avoidance Model BAM website: **http://www.usahas.com/AHASMap.html?Area=EIELSON AFB**

7.3.3. Incorporate coverage of this instruction for all SOFs during initial and recurrent SOF training

7.4. **354th Maintenance Group, Commander** (354 MXG/CC) will issue specific guidance to assigned personnel concerning implementation of this instruction. As a minimum, that guidance will include: Issue specific guidance to maintenance personnel for reporting hazardous bird activity to the SOF, Tower Supervisor or AMOPS, and BASH/dispersal personnel.

8. Specific Responsibilities. This list is not all-inclusive and should be tailored as necessary.

8.1. **354th Fighter Wing.** The Vice Wing Commander (354 FW/CV) or designated representative, chairs the Bird/Wildlife Hazard Working Group (BHWG) and is the approval authority for its recommendations.

8.2. **354th Operations Group Commander** (354 OG/CC). The 354 OG/CC will issue specific guidance for aircrew, SOF, Air Traffic Control, AMOPS, and Command Post on procedures to avoid areas and times of known hazardous bird concentrations, mission permitting.

8.2.1. Declares, disseminates, and terminates Bird Watch Conditions at the Eielson AFB installation, training areas, and deployed locations through the SOF, or designated representatives.

8.2.2. Issues specific guidance for aircrews and SOFs on procedures to be followed under BWC.

8.3. **354th Operations Group Standardization and Evaluation** (354 OG/OGV). The 354 OG/OGV will:

8.3.1. Ensure bird hazard awareness and the Eielson AFB BASH program is briefed to all TDY personnel.

8.3.2. Provide guidance to aircrews for the use of the United States Bird Avoidance Model (USBAM) and, when available, the Avian Hazard Advisory System (AHAS) during the mission planning process if available.

8.3.2.1. AHAS is a national radar bird detection system for the US Air Force. It uses the next generation radar (NEXRAD) weather radar system to monitor large-scale migratory bird activity in the lower 48 states. The current conditions shown by the AHAS web page also include the risk from migration and soaring bird activity, which is determined by predictive models using National Weather Service (NWS) weather data. More information is available on the AHAS website: **http://www.usahas.com**.

8.3.2.2. The USBAM program objective was to develop a predictive bird avoidance model using geographic information system (GIS) technology as a key tool for analysis and correlation of bird habitat, migration, and breeding characteristics, combined with key environmental and man-made geospatial data. More information is available on the Bird Avoidance Model BAM website: **http://www.usahas.com/AHASMap.html?Area=EIELSON AFB**

8.3.3. Incorporate coverage of this instruction for all SOFs during initial and recurrent SOF training

8.4. **354th Maintenance Group, Commander** (354 MXG/CC) will issue specific guidance to assigned personnel concerning implementation of this instruction. As a minimum, that guidance will include:

8.4.1. Issue specific guidance to maintenance personnel for reporting hazardous bird activity to the SOF, Tower Supervisor or AMOPS, and BASH/dispersal personnel.

8.4.2. Issue specific guidance to maintenance personnel for reporting all bird strikes discovered on aircraft to Quality Assurance (354 MXG/MXQA), 354 FW/SEF,

USDA/WS personnel, and ensure the preservation of all remains. Even the smallest fragment of remains or blood should be forwarded for identification.

8.4.3. Ensures all aircraft cavities and openings are inspected on the ramp or after undergoing maintenance in hangars for birds or nesting materials before returning to operation.

8.4.4. Ensure all MXG personnel and affiliated contractors close all airfield access gates upon entering and exiting entry control gates and prohibit "piggy-backing." Piggy-backing is defined as one vehicle opening a flight line access gate, and leaving it open for another vehicle to enter unmonitored at a later time. Multiple vehicles entering and exiting at one time is permitted if gate access is monitored to prevent wildlife from entering the flight line.

8.5. **354th Mission Support Group Commander** (354 MSG/CC) will issue specific guidance to assigned personnel concerning implementation of this instruction.

8.6. **354th Civil Engineering Squadron Commander** (354 CES/CC) will:

8.6.1. Initiate bird/wildlife surveys and write environmental assessments and environmental impact statements as required by law.

8.6.2. Provide 354 CES/CEIEA support in obtaining federal and state permits required for depredation (*see attachment 4, paragraph 'f' for specific depredation procedures*), salvage, collection, and possession of all migratory or local species. Provide guidance and support for biological monitoring of wildlife populations and habitat management to improve technical advice for wildlife and vegetation management programs.

8.6.3. Conduct and assist with habitat modification operations in accordance with Section 5 of this instruction.

8.6.4. Advise USDA/WS and 354 FW/SEF of civil engineering projects that may impact airfield operations related to bird and wildlife hazards through the weekly Airfield/Airspace Waiver Working Group (AAWWG) meeting hosted by the 354 CES.

8.6.5. Monitor bird migration activity and coordinate with both USDA and 354 FW/SEF if Phase II dates should be modified.

8.6.6. Ensure all 354 CES personnel and affiliated contractors close all airfield access gates upon entering and exiting entry control gates, and prohibit "piggy-backing." Piggy-backing is defined as one vehicle opening a flight line access gate, and leaving it open for another vehicle to enter unmonitored at a later time. Multiple vehicles entering and exiting at one time is permitted if gate access is monitored to prevent wildlife from entering the flight line.

8.6.7. Manages all 354 FW bird strike reports. Forward remains IAW AFMAN 91-223, *Aviation Safety Investigations And Reports*. After remains are identified, ensure Air Force Safety Automated System (AFSAS) reports are finalized. Assist TDY aircrews with bird strike procedures as required.

8.6.8. Coordinates with USDA/WS and 354 CES/CEIEA to determine if Phase II dates, listed below, need to be modified in response to significant changes in the local bird population or migratory activity.

8.6.9. Coordinates with 354 OG/OGV and AMOPS to announce Phase II operations.

8.6.9.1. BASH Phase I - All dates not designated as Phase II.

8.6.9.2. BASH Phase II – Declared during predicted migratory surge periods, typically 15 Apr - 15 May and 15 Aug - 20 Sep. Ensure a Notice to Airman (NOTAM) is published announcing the start and end of Phase II. 354 OG/OGV will assist 354 FW/SEF as required to publish a Safety Read File implementing BASH Phase II.

8.6.10. Briefs aircrew on bird strike hazards prior to each spring migration season through any means such as a Flight Safety Meeting, step briefs, or FCIF read files. Ensures bird strike hazards and reports are briefed periodically during Flight Safety Meetings.

8.6.11. Serves as the BHWG Coordinator.

8.6.11.1. Schedules meetings of the BHWG and publishes meeting minutes. Maintains BHWG meeting minutes for at least 3 years.

8.6.12. Ensures sufficient copies of the AF Form 853 (*Air Force Bird Strike Report*) are available at maintenance debrief, AMOPS, and all flying organizations.

8.6.13. Ensures the flight planning room, located at Base Operations has a current BASH map that illustrates local BASH hazards to transient aircrews. Coordinate with 354 CES/CEIEA and the USDA/WS for updates as required.

8.6.14. Engages in constant communication between the USDA/WS and 354 CES/CEIEA to determine the best solution to any wildlife that may pose a threat to aircraft.

8.6.15. Considers all sources for the improvement of this program. There are many national and international BASH conventions and committees that 354 FW/SEF should attend. Many of these opportunities are listed on the AFSC BASH website.

8.6.16. Reviews this BASH instruction, IAW AFI 91-202, and runs the self-inspection checklist (AFPAM 91-212, Attachment 2) annually. Document the review and self-inspection.

8.6.17. Provides guidance, when requested, on the collection of bird/wildlife remains for identification (reference AFMAN 91-223, paragraph 1.5.3). Reference the Air Force Safety Center BASH website for the latest collection methods: **http://www.afsec.af.mil/aviationsafetydivision/bash/index.asp**.

8.6.18. Requests funding to support BASH programs; i.e., training, equipment purchase and maintenance, conference attendance, etc.

8.6.19. Maintains applicable depredation permits IAW AFI 91-202 as supplemented by PACAF (*see attachment 4, paragraph 'f' for specific depredation procedures*).

8.7. **354 FW Supervisor of Flying (SOF).** The SOF has responsibility to conduct airfield inspections and direct detection and BASH/dispersal personnel, when necessary. The SOF will:

8.7.1. Declare a BWC when there is a visual observation of bird activity on or near the airfield, when aircraft relay bird hazard information, or when any personnel or agency on or near the flight line relay observations to the SOF.

8.7.2. Notify departing flights of the BWC if they check in on SOF frequency prior to takeoff. Notify arriving flights of the BWC if they check in during their arrival.

8.7.3. Obtains and posts current bird activity data and ensures it is readily available for aircrew briefings. Advises each crew of the bird watch conditions at the airfield and in training areas.

8.8. **354th Fighter Wing Command Post** (354 FW/CP) will notify inbound aircraft who contact Command Post of any bird watch condition above LOW. Include location, movement, and other known data of the bird activity which is driving the BWC.

8.9. **Airfield Management** (354 OSS/OSAA) has responsibility to conduct airfield inspections and direct detection and BASH/dispersal personnel, when necessary. AMOPS (354 OSS/OSAA) will:

8.9.1. Advise ATC, or the SOF if on duty, of bird activity observed on or near the airfield or in the traffic pattern.

8.9.2. Recommend changes of a BWC to the SOF when there is a visual observation of bird activity on or near the field, when aircraft relay bird hazard information, or when any personnel or agency on or near the airfield relays observations.

8.9.3. If no SOF is on duty, declare a BWC commensurate with observed bird activity on or near the airfield, when aircraft relay bird hazard information, or when personnel or agencies on or near the flight line relay observations. Advise ATC, and BASH/dispersal personnel of changes in BWC.

8.9.4. After being notified the BWC has changed, pass the updated information to the Command Post and local flying units.

8.9.5. Advise BASH/WS of new arrivals, departures, or changes in flight schedules to allow dispersal personnel to efficiently and effectively manage wildlife aircraft hazards in the BEZ and WEZ.

8.9.6. Monitor bird/wildlife population, grass height, and standing water within the Airfield Zone and report problems to the appropriate OPRs for modifying or eliminating the problem.

8.9.7. Ensure detection and dispersal teams are dispatched to the location of the birds creating the hazard.

8.9.8. Notify USDA/WS or 354 CES/CEIEA for disposal of wounded animals.

8.9.9. Ensure airfield access gates are closed if not currently in use. Report any practice of “piggy-backing” to 354FW/SEF immediately.

8.9.10. Ensure all Airfield Management personnel review this instruction.

8.10. **Air Traffic Control** (354 OSS/OSAT): Air traffic control personnel will:

8.10.1. Ensure all tower personnel review and are familiar with their responsibilities as specified in this instruction.

8.10.2. Advise AMOPS, and the SOF of bird activity observed on or near the airfield or in the traffic pattern and adjust aircraft operations accordingly. Notify AMOPS and BASH/dispersal personnel of any change to the associated BWC.

8.10.3. Allow detection and dispersal teams priority access on the runway to disperse birds in the primary BEZ. If warranted, ensure **BWC SEVERE** has been declared prior to initiation of dispersal operations in the BEZ, and as needed for dispersal operations in the WEZ.

8.10.4. Provide bird advisory information to aircraft in accordance with FAA Order 7110.65, *Air Traffic Control* and FAA Order 7210.3, *Facility Operation and Administration*. Include position, species or size of birds, if known, course of flight, and altitude. Does this for at least 15 minutes after receipt of such information from pilots or from adjacent facilities unless visual observation or subsequent reports reveal the activity is no longer a factor. Ensure bird watch conditions above condition **BWC LOW** are included in Eielson AFB Automated Terminal Information System (ATIS) broadcasts, as appropriate. For rapidly changing BWCs, place a statement on ATIS advising aircrews to contact ground, tower, SOF or final controller for the latest BWC.

8.10.5. Advise Fairbanks TRACON if **BWC MODERATE** or **SEVERE** is declared for extended periods of time that will impact flying operations.

8.10.6. Reports observed bird activity to the SOF, Airfield Management, and USDA/WS personnel as appropriate and required, as other duties will allow.

8.10.7. Allow detection and dispersal teams access on the runway to disperse birds in the primary BEZ at all times, but especially during BWC MODERATE or SEVERE. Enact BWC SEVERE as necessary prior to initiation of dispersal operations in the BEZ and as warranted for dispersal operations in the WEZ.

8.10.8. Identifies radar targets (If able) as possible bird activity when appropriate to provide warning to pilots.

8.10.9. Issues traffic advisories such that pilots can make operational changes such as missed approaches or delayed takeoffs when possible bird hazards appear on ATC radar or direct observations.

8.10.10. Coordinates with bird hazard patrol personnel when active dispersal is required or on-going within the airport operating area on a workload-permitting basis.

8.11. **Squadron Assigned Flight Safety Officers (SAFSO)** will:

8.11.1. Brief aircrews to promptly report all bird strikes and hazardous conditions IAW this instruction.

8.11.2. Ensure any applicable bird activity data is readily available to aircrews during mission planning.

8.11.3. Make seasonal bird hazards a regular topic at flying safety meetings.

8.12. **Aircrew** will**:**

8.12.1. Check the BWC status before flight. Bird hazards mitigation should be considered during mission planning and briefed to the flight. Aircrews should reference the birdavoidance model **http://www.usahas.com/AHASMap.html?Area=EIELSON AFB** and, if operating in the CONUS, AHAS **http://www.usahas.com**.

8.12.2. Following a bird strike, aircrews should immediately advise ATC and/or the 354 FW SOF and land as soon as conditions permit to have the aircraft inspected by qualified maintenance personnel.

8.12.3. Exercise caution when conducting pattern work at airfields other than Eielson AFB. The aircraft commander is responsible for securing off-station bird activity status. **Note:** Most other airfields in Alaska do not have the same level of wildlife management/mitigation that Eielson does. Therefore, crews should exercise caution--particularly during the migratory season (15 Apr through 31 Oct).

8.12.4. Promptly report all bird strikes and hazardous conditions to 354 FW/SEF or your unit safety officer as soon as possible. Anytime an aircraft experiences a bird strike, the crew will complete an AF Form 853, *Air Force Bird Strike Report,* and coordinate with 354 FW/SEF and USDA/WS to collect all wildlife remains and strike information. These forms are available at AMOPS, Maintenance Debrief, and in flying squadrons.

8.12.5. Aircrews that experience a bird strike while off-station are responsible for filling out AF Form 853 and collecting remains. In lieu of AF Form 853, aircrew may contact 354 FW/SEF via phone and pass the required information to them. For guidance on the collection of bird/wildlife remains, contact 354 FW/SEF or reference AFMAN 91-223, paragraph 1.5.3. Also, reference the Air Force Safety Center BASH website for the latest collection methods: **http://www.afsec.af.mil/aviationsafetydivision/bash/index.asp**

8.12.6. Pilot Reports (PIREPS) by aircrews and ground observations are essential to adequately assess and help identify bird and wildlife hazards on the airfield and in the local flying vicinity. When pilots spot birds or other wildlife, notify the controlling agency so others can be informed of the hazard. Aircrew should relay the following information:

8.12.6.1. Location

8.12.6.2. Altitude

8.12.6.3. Local time of sighting

8.12.6.4. Approximate number of birds and direction of flight

8.12.6.5. Wildlife type, species or size of bird, if known

8.13. **Public Affairs (PA)**: 354 FW/168 ARW public affairs will:

8.13.1. Participate as required and upon request will provide a public information program designed to inform base personnel, dependents, and the general public on the hazards and costs of uncontrolled bird activity and the measures being taken to minimize them.

8.13.2. Provides photographic services to document bird strikes and related activities as required.

8.13.3. Provides graphic support to publicize bird hazards and actions taken to minimize them as required.

8.14. **354 Security Forces Squadron (354 SFS):** 354 SFS will:

8.14.1. If warranted, inform command post of the use of any pyrotechnics or firearms during dispersal operations by USDA personnel upon notification. This will prevent false active shooter alerts and base lock downs.

9. Bird Strike Reporting. This section outlines the procedures and forms required to report bird strikes to enhance the BASH program at Eielson AFB.

9.1. **SAFSOs assistance.** SAFSOs should assist aircrews involved in a bird strike, provide the AF Form 853, *Air Force Bird Strike Report*, and deliver strike remains to 354 FW/SEF and USDA/WS within 24 hours of the incident.

9.2. **Damage Totals.** Bird strikes that cause over $20,000 damage will be reported in accordance with AFI 91-204. 354 FW/CP will provide incident notification IAW AFMAN 10-206, *Operational Reporting* as supplemented by PACAF.

9.3. **Maintenance personnel** discovering a bird strike will notify Quality Assurance (354 MXG/ MXQA) who will notify 354 FW/SEF and USDA/WS. Collect bird remains from the aircraft or airfield and forward to 354 FW/SEF.

9.4. **AMOPS and transient alert personnel** will assist transient aircrews and will obtain unit/organization information and forward the information to 354 FW/SEF. If runway operations must be immediately resumed for inbound aircraft, Airfield Management will remove remains and provide them to the USDA/WS after operations have resumed.

9.5. **Airfield Management** will notify the USDA/WS dispersal personnel if any bird remains are found on or in the immediate vicinity of the runway or any area used by aircraft.

9.6. **354th FW Flight Safety Office (SEF)** will forward wildlife remains in accordance with AFMAN 91-223. After remains are identified, 354 FW/SEF will finalize the AFSAS report.

10. Bird Hazard Working Group (BHWG). The function of the BHWG is to collect, compile, and review data on bird strikes, identify and recommend actions to reduce hazards, recommend changes in operational procedures, prepare informational programs for aircrews, and assist the commander by acting as a point of contact for bird/wildlife off-base issues. The BHWG will submit all recommendations to the 354 FW Commander for approval.

10.1. **BHWG meetings** will discuss, but are not limited to, the following topics: Eielson AFB bird strike statistics, USAF bird strike statistics, USAF BASH team updates, locally observed bird activity, local wildlife habitat management/modification, local BASH instruction procedures, responsibilities, and changes, BASH awareness, education, and training, and status and activities of the USDA/WS teams. BHWG meetings should concentrate on taking a proactive role in preventing future strikes, and not focus solely on reviewing historical data.

10.2. **Semi-Annual Meetings.** Meetings will be held two times a year. Recommended schedule is an initial meeting in March to focus on the upcoming BASH season and spring

migration, and an October meeting to summarize the BASH season and identify any outstanding issues prior to the next season. Any other meetings will be held as directed by the 354 FW/CV if unusual bird or wildlife conditions warrant. BHWG minutes will be maintained for a minimum of 3 years.

10.3. **BHWG Composition.** The chairperson will be the Vice Wing Commander (354 FW/CV) or designee. As a minimum, the group will consist of representatives from Wing Safety (354 FW/SE, 168 ARW/SE), operations group (354 OG/CC/OGV, 168 OG/CC), mission support group (354 MSG/CC), aircraft maintenance (354 MXG/CC/FOD, 168 MXG/CC), civil engineering (354 CES/CC/CEIEA/CEORH, 168 CES/CC), AMOPS (354 OSS/CC/OSA/OSAM, 168 OSF), air traffic control (354 OSS/OSAT), Aggressor squadron commander (18 AGRS/CC), 210 Rescue Squadron Det/CC, Security Forces (354 SFS/CC), Fire Department (354 CS/CC), Judge Advocate (354 FW/JA), Public Affairs (354 FW/PA), US Department of Agriculture (USDA/WS), Federal Aviation Administration representative (FAA), and representatives from other tasked organizations (ANNEX A) as required. Meeting minutes will be maintained, attendance recorded, and appropriate distribution made.

MICHAEL P. WINKLER, Col, USAF
Commander

Attachment 1

GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION

References

AFI 11-202 Vol 3, General Flight Rules

AFI 13-204 Vol 3, Airfield Operations Procedures and Programs

354 FWI 11-250 IC-1, Flying Operations, Local Flying Procedures

AFI 32-1053, Pest Management Program

AFI 32-7064, Integrated Natural Resources Management

AFI 33-360, Publications and Forms Management

AFPD 91-2, Safety Programs

AFMAN 91-201, Explosives Safety Standards

AFMAN 91-223, Aviation Safety Investigations and Reports

AFPAM 91-212, Bird/Wildlife Aircraft Strike Hazard (BASH) Management Techniques

AFI 91-202, The US Air Force Mishap Prevention Program

AFI 91-204, Safety Investigations and Reports

AFI 91-207, The US Air Force Traffic Safety Program

FAA Order 7110.65, Air Traffic Control

FAA Order 7210.3, Facility Operation and Administration

50 CFR 21.41, Migratory Bird Depredation Permits

51 FR 41206, Final Rule for Regulatory Programs of the Corps of Engineers

Adopted Forms

AF Form 847, Recommendation for Change of Publication

AF Form 853, Air Force Bird Strike Report

Abbreviations and Acronyms

AFSAS—Air Force Safety Automated System

AFSC—Air Force Safety Center

AGL—Above ground level

AHAS—Avian Hazard Advisory System

ATC—Air traffic control

ATIS—Automatic Terminal Information *Service*

BAM—Bird Avoidance Model

BASH—Bird/wildlife Aircraft Strike Hazard

BBS—Breeding Bird Survey

BHWG—Bird Hazard Working Group

BEZ—Bird Exclusion Zone

BWC—Bird Watch Condition

CATM—Combat Arms Training & Maintenance

CBT—Computer Based Training

CE—Civil Engineering

CONUS—Continental United States

EM—Environmental Management

GIS—Geographic Information System

MOA—Military operating area

NEXRAD—Next generation weather radar

NGB—National Guard Bureau

NOTAM—Notices to Airman

NWS—National Weather Service

OPR—Office of Primary Responsibility

SAFSO—Squadron Assigned Flight Safety Officer

SOF—Supervisor of Flying

SFS—Security Forces Squadron

USBAM—United States Bird Avoidance Model

USDA—United States Department of Agriculture

USFWS—United States Fish and Wildlife Service

WEZ—Waterfowl Exclusion Zone

Terms

Bird Avoidance—Techniques (including radar detection, warning, and use of bird data) that reduce potential for bird strikes by allowing aircrews to schedule or maneuver to avoid bird concentrations.

Bird Control—Any biological, chemical, or physical procedure that discourages the presence of birds. These procedures include repellents, toxicants, harassment, grounds maintenance, and habitat modification.

Bird Data—Information about the ecology, anatomy, physiology, behavior, size, movement, and distribution of birds that may be helpful in bird control, bird avoidance, and aircraft design.

Bird Species—A group of interbreeding birds with common characteristics such as size, shape, voice, and behavior.

Bird/Wildlife Strike—Any collision between a bird or other species of wildlife and an aircraft.

Bird Watch Condition Codes—The following terminology is established for rapid communication of bird activity. When communicating, avoid color-coded conditions to eliminate any confusion with color codes used during exercises, contingencies, and emergencies (i.e., disaster preparedness exercises). Also, give bird locations with the condition code: **Bird Watch Condition SEVERE.** Bird activity on or immediately above the active runway or other specific location representing high potential for strikes. Supervisors and aircrews must thoroughly evaluate mission need before conducting operations in areas under condition SEVERE. **Bird Watch Condition MODERATE.** Bird activity near the active runway or other specific location representing increased potential for strikes. BWC moderate requires increased vigilance by all agencies and supervisors, and caution by aircrews. **Bird Watch Condition LOW.** Bird activity on and around the airfield representing low potential for strikes.

Damaging—**Bird/Wildlife Strike**—Any bird/wildlife strike that causes reportable damage according to AFI 91-204, *Safety Investigations and Reports*.

Habitat—The total environmental elements of food, water, shelter, nesting sites, and space that must be present for wildlife species to survive.

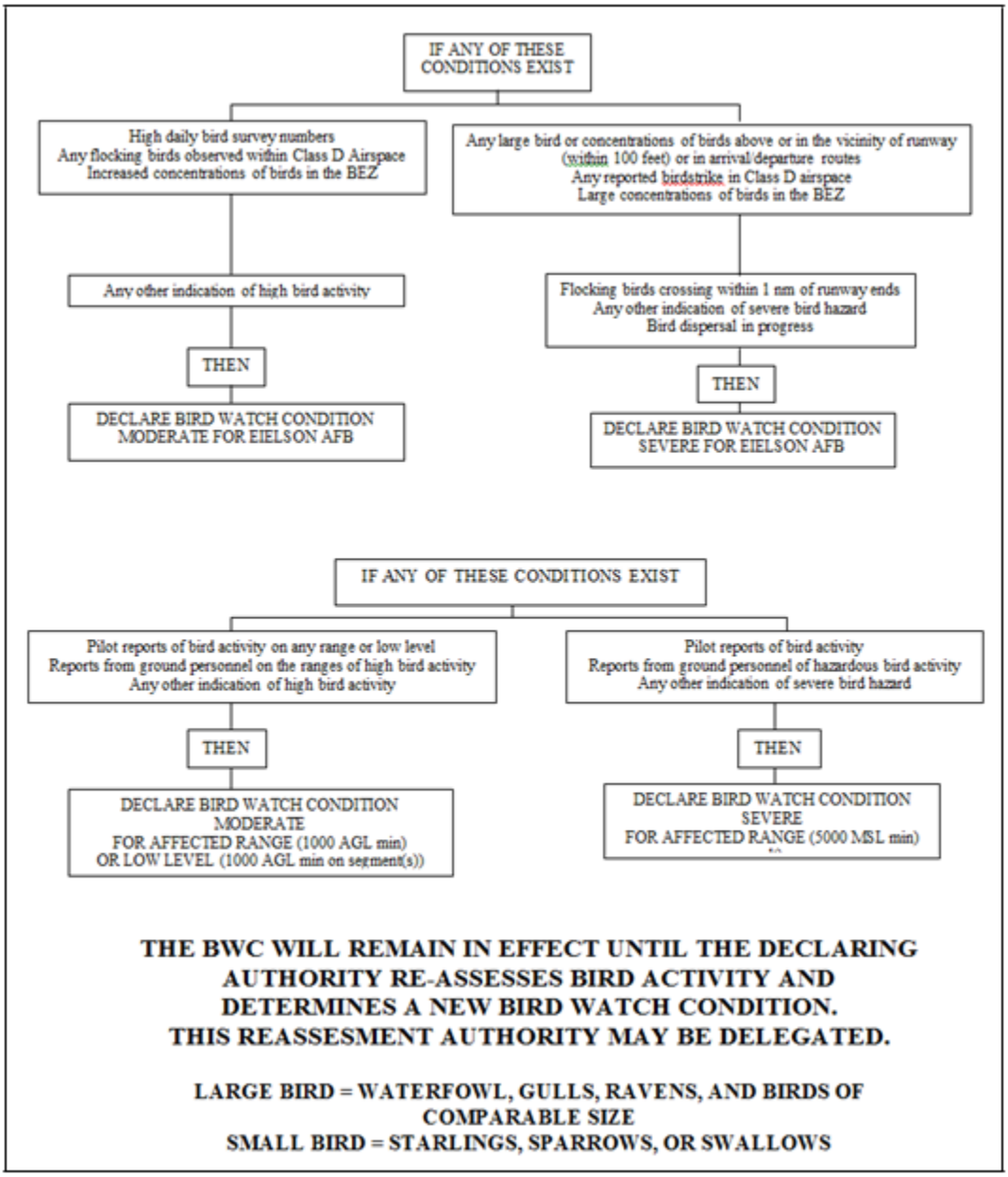
Non—**damaging Bird/Wildlife Strike—**Any bird/wildlife strike that does not cause reportable damage to the aircraft IAW AFI 91-204, *Safety Investigations and Reports*.

Piggy-backing—The practice of allowing one vehicle to open a flight line access gate and leaving it open for another vehicle to enter or exit unmonitored at a later time.

Attachment 2

BIRD WATCH CONDITION FLOWCHART

Figure A2.1. Bird Watch Condition Flowchart this flowchart provides objective criteria to assist the SOF in determining BWC



Attachment 3

SUPERVISOR OF FLYING (SOF) BIRD ACTIVITY/HAZARD CHECKLIST

Figure A3.1. Supervisor of Flying (SOF) Bird Activity/Hazard Checklist

1.Notify 354 OG/CC (168 OG/CC as necessary) when time permits.

2.354 FWI 91-212 authorizes the following personnel to declare bird-watch conditions:

a.SOF

b.AMOPS

c.Others as designated by the OG/CC or his representative

3.Designate BWC IAW with the BWC Flowchart.

4.Notify Airfield Management and BASH/WS personnel if birds are observed and considered a hazard to flying operations.

5.If conditions warrant, consider delaying departures, directing full stop landings or straight in approaches.

6.Do not hesitate to downgrade the BWC as the bird hazard decreases. Advise and coordinate with BASH/WS personnel prior to changes in BWC.

7.Notify 354 OG/CC (168 OG/CC as necessary) of actions taken.

NOTE: BWC Moderate or Severe at Eielson AFB does not mean that low-level routes and restricted areas are BWC Moderate or Severe. Flight leads should use caution on the ranges or low level routes and pass information to the SOF if conditions warrant increasing or decreasing the BWC. Pilots should consult the bird migration map prior to flying. The SOF can pass to pilots that certain areas are considered BWC Moderate or Severe due to PIREPS (e.g., the Salcha River Valley is BWC Moderate).

CLARIFICATION: 354 OG/CC is the point of contact for all requests by **all** aircraft to deviate from this plan. For example, if a 168 ARW tanker requests to accomplish multiple low approaches during **BWC Moderate**, the sole approving authority will be 354 OG/CC. The 354 OG/CC may coordinate with the 168 OG/CC for consideration of 168 ARW operations, time permitting.

Attachment 4

BIRD/WILDLIFE MANAGEMENT TECHNIQUES AND RECOMMENDATIONS

Figure A4.1. Bird/Wildlife Management Techniques and Recommendations

Introduction. Bird control and dispersal is primarily accomplished under contract by USDA personnel. However, a variety of dispersal and control measures should also be available to AMOPS, Flight Safety, and other USAF personnel to use on an as-needed basis and coordinated with USDA. These measures should be readily available at any time when birds or other wildlife threaten airfield operations. Pyrotechnic equipment may be stored in Airfield management for immediate access as observed. These devices may also be taken on deployments where periodic use may be necessary away from the home unit.

a. Active Harassment. A combination of frightening devices should be available for use whenever birds are present on the airfield or in surrounding areas. Primary among those are pyrotechnic devices that can be fired from 15mm starter pistols, standard 12-gauge shotguns, or modified flare pistols. Pyrotechnics are listed in the Air Force Table of Allowances for airfield bird control and may also be ordered through local purchase mechanisms if necessary. These devices project pyrotechnics many meters over flocks of birds that present hazards. Skillful use of the devices can disperse birds from the field in desired directions. They produce a variety of loud sounds and explosions, bright flashes of light, and/or trailing smoke. Training for safely using the devices and coordination with the Air Traffic Control (ATC) Tower is imperative. Pyrotechnic devices can be extremely effective in dispersing waterfowl, gulls, ravens, shorebirds, and flocks of blackbirds. Gulls, ravens, and blackbirds may also be dispersed using a combination of pyrotechnics and bioacoustics. Bioacoustics are the recorded distress and alarm calls of species to be dispersed. Ensure species-specific calls are used. They are projected over a speaker system that may be mounted on the roof or through the window of a vehicle. Birds will sometimes disperse upon hearing species-specific calls, but may come to investigate the source of the sound and can then be encouraged to leave using pyrotechnic devices. These active harassment techniques should be used on the airfield and in all hazardous surrounding areas. These techniques may also be used in coordination with local property owners, to disperse any known bird roosts from dense trees such as found in nearby parks, golf courses, ponds, and other structures. Active harassment devices may also be taken on deployments to areas where airfield bird control may not be conducted by local agencies. Additional harassment techniques such as networks of remotely triggered gas cannons, radio-controlled model aircraft, or others can be considered as effective supplements to other dispersal techniques. Creativity and intensity of such programs will make the overall effort much more successful and delay habituation
to the combination of techniques. It will also be important to conduct active harassment, primarily by use of pyrotechnic devices, during off-duty hours. AMOPS staff should have the equipment available to conduct bird dispersal operations outside normal duty hours. Such activity will ensure birds remain off the airfield and prevent habituation problems that complicate efforts during regular operations.

b. Small Mammal Control. Rodents such as voles (*Microtus*), Woodchucks (*Marmota monax*), and Beavers (*Castor canadensis*) and other small mammals such as Snowshoe Hares (*Lepus americanus*) are abundant throughout the region and have established populations in the immediate surrounding areas and on the airfield itself. Small mammals attract a variety of raptors such as Red-tailed Hawks and Kestrels that feed on them. Rodents and hares may also damage wiring and undermine the integrity of pavements and overruns. Removal by trapping or poisoning in accordance with Alaska law may be conducted by Pest Management personnel or under contract with USDA, Wildlife Services. Rodenticides such as phostoxin are most effective and may be used to eliminate burrowing rodents by placing tablets of the

poison into burrows, sealing the openings, and allowing the moisture-activated fumigants to permeate the burrow systems.

a.Invertebrate Control. Various invertebrates including grasshoppers occur on the airfield and may attract a wide variety of birds including gulls and raptors. Be prepared to sweep the operating surfaces any time heavy rains or mowing operations force invertebrates onto the tarmac. Additional bird dispersal techniques must be available during those times as well. Insecticides can be applied on a limited basis as necessary and in compliance with state and federal law.

b.Waterfowl Control. There are a variety of waterfowl species that pose very significant potential hazards to aircraft operating from Eielson AFB. Canada Geese, and particularly local breeding populations, may be most significant, though several species of ducks are also common in the area as observed during the NGB and BASH Team visits. Some of these hazards are not possible to control as birds may merely be migrating through the region during spring and fall, or exhibiting local movement patterns between features in the vicinity of the airfield. However, there are several ponds in the local area where resident goose populations can pose a hazard to nearby flight operations that can be controlled. Canada Geese are also commonly observed on several of the nearby local agricultural areas. Canada Goose and other waterfowl population control should continue to be exercised through USDA or base personnel in these areas and others in the surrounding community wherever potentially hazardous concentrations are noted. Egg oiling or addling, and goose roundups during flightless seasons should be employed as applicable. Standard dispersal techniques should also continue to be employed to reduce these hazards. Waterfowl are very easily dispersed through the use of standard frightening devices. Pyrotechnics are most effective. In some base structures, stringing wires or fishing line over ponds and surrounding the structures six inches off the ground is a very effective psychological barrier to birds that attempt to land on the water or walk up the banks to feed. Such measures can virtually eliminate usage of the ponds after a period of avoidance learning.

c. Large Mammal Control. Moose, bears, coyotes, foxes and other large mammal species are abundant in the region and on base property. A buffer zone between fences and surrounding forested habitat can deter animals from approaching the field, but will not eliminate their presence. Removal of these animals by harassment or lethal measures has been necessary in the past to reduce severe hazards caused by these animals on the airfield. It is also imperative that the base manage the property inside the security fence to maintain it in a manner where it is least attractive to all wildlife including birds and mammals. Providing suitable refuge habitat nearby, but away from the AOA will also limit these wildlife from entering the airfield.

d. Depredation and Controlled Hunting. See 354 FW/SE share point site for USFWS and Air Force Policy letters regarding depredation. Removal of nuisance birds and other wildlife may be conducted with appropriate Federal and State permits by DoD Pest Management, AMOPS, safety, or contracted USDA personnel. All BASH depredations must be coordinated through USDA/WS and 354 FW/SEF. Trapping, poisoning, and shooting of individuals or flocks of birds such as Canada Geese and gulls, or other wildlife such as coyotes, foxes, moose, and rodents may be required on a periodic basis. Depredation is a last resort measure that may reinforce other habitat management or active control efforts and is recommended when a severe hazard persists for several days. Leaving dead birds or effigies exposed for a day or two following such efforts may also reinforce these techniques. Dead birds must not be placed near the operating surfaces as they may attract scavengers and increase the hazard. See Air Force and USFWS Policy Letters located with 354 FW/SEF for additional guidance in this area. The base has exercised its depredation permits to limit wildlife populations on and near the airfield and operating areas. Additionally, the base has allowed limited hunting on its property outside secure areas for moose and other wildlife. Control in the surrounding areas may also help limit numbers on the airfield. Use of hunting in this manner is an additional means of keeping moose and other wildlife populations below carrying capacity. These programs should continue in the future as long as they don't conflict with BASH goals and objectives, and not pose a hazard to aircraft safety

(i.e., waterfowl hunting/dispersing birds without ATC communication within the BEZ and WEZ). It is important for the base to maintain and annually renew its depredation permits.

e.Bare Areas. There are a number of bare areas on the airfield, some associated with prior construction activities, snow removal, and old operating surfaces. Bare areas may provide ideal roosting and loafing sites for shorebirds, gulls, and waterfowl, ravens, and small flocking Passerines. They also provide nesting sites for birds such as shorebirds and grassland passerines and prevent turf management as described above. Bare areas also contain gravel and grit that is highly attractive to birds such as pigeons that use these materials to aid in digestion. These areas also capture windblown seeds that are visible and attractive to a variety of birds. Though not a BASH issue, such areas may also contribute to FOD problems on the airfield. Bare areas should be eliminated and seeded with grass to establish a thick turf as described above. Red-tailed Hawks, and other raptors may soar over bare soil and tarmac as it warms early in the day and thus provides ideal thermal soaring conditions. Construction sites must be targeted for reseeding as soon as possible after project completion. There were also limited areas on the airfield where old operating surfaces had deteriorated and broken tarmac was still in place. Cracks in surfaces or those scheduled for removal or repair were filled with a mixture of vegetation, and gravel and grit were scattered over the areas. Smaller areas along access routes were formed with gravel that attracts birds as described above. Such surfaces provide ideal feeding, nesting, and loafing areas for a wide variety of birds. These areas consist mostly of open space so that visual communication between flock members can occur. They provide grit that can aid in digestion as in the bare areas mentioned above. Ideally, target old surfaces for removal, and they should be reseeded with grass. The base's long range plan should address these conditions and target funding to assist in budgeting for such projects. In the interim, it is best to continue to remove the vegetation and routinely sweep the gravel and grit from cracked surfaces as observed. Paving access routes is the best alternative but access routes and old surfaces can be sealed with binding agents to limit available grit and vegetative growth.

h. Bioacoustics. The equipment required to adequately project these calls includes a cassette tape deck or CD player mounted in a vehicle and a speaker mounted on its roof. Special care must be taken to play the recording in short intervals to prevent habituation by the birds. Play the recording for 20-30 seconds and then pause briefly. Repeat the procedures several times if necessary. The birds should respond by taking flight or becoming alert. These calls are effective for gulls, blackbirds, starlings, cowbirds, grackles, ravens, crows, and some shorebirds. Only bioacoustics for the species to be dispersed should be used, as calls are species-specific. Calls for all species of concern may not be commercially available and other methods must be used in such instances. Pyrotechnics should be used in conjunction with bioacoustics to enhance complete dispersal.

i. Pyrotechnics. Pyrotechnics include 15mm or 12-gauge scare cartridges that produce a secondary explosion, or screamers that produce a loud whistle to scare birds from the area. The scare cartridges are launched from either a shotgun or a pyrotechnic pistol (31-8 Very Pistol) with a steel sleeve insert to modify the gun to the 12-gauge size. A 15mm hand held launcher is available to fire 15mm screamers and bangers. Pyrotechnics are effective for dispersing most bird species and can also be used for coyotes, foxes, and moose.

j. Gas Cannons. Gas cannons may be used. These devices should be operated, especially at dawn and dusk, as birds come in to feed or roost. Cannons must be relocated frequently to avoid habituation problems. Remotely triggered models, fired only when necessary, are preferred to models on timers. These devices are very effective when used in conjunction with other harassment techniques on waterfowl and other game birds, and can also be used for gulls and blackbirds.

k. Depredation. Birds must be killed occasionally as a reinforcement of other methods. Rock Pigeons (domestic pigeons), European Starlings, and House Sparrows can be killed without a permit. Most other species require federal and state permits. Eielson Natural Resources (354

CES/CEIEA) will contact the US Fish and Wildlife Service and the state wildlife agency for permits and assistance in this area, or may be listed as a sub-permitee under the host's depredation permit. Also see APPENDIX 3, Attachments 2 and 3.

l. Other Devices. Ingenuity is encouraged in the bird scare program. Other devices may be used. Bird diverters, lasers, radio-controlled model aircraft, falconry, or dogs may be considered based on availability and problem bird species. Contact the BASH team at HQ AFSC/SEFW, Kirtland AFB, NM for advice in this area.

m. Ineffective Methods. Ultrasound, rubber snakes, stuffed owls, rotating/flashing lights, loud music, and other such devices have not proven very effective and should be used with caution..